Remarks

The Applicants note with appreciation the Examiner's helpful comments concerning JP '754 and EP '846 in the two previously submitted Information Disclosure Statements. The Applicants enclose English translations of the Abstracts for both of JP '754 and EP '846. The Applicants also enclose Form PTO-1449 for the Examiner's convenience.

The Applicants have added the subject matter of Claim 17 into Claim 14 along with a lower limit of 0.005%. Claim 17 has thus been cancelled.

Claims 12 – 20 stand rejected under 35 USC §112, second paragraph, as being indefinite. The Applicants note with appreciation the Examiner's helpful comments concerning the term "excellent." Claims 12 – 15 have been amended to remove that term. Further clarifying amendments to Claims 12 – 15 have been made. There is no change in scope of those claims, merely rearrangement of terminology already existing within those claims. Withdrawal of the rejection of Claims 12 – 20 is respectfully requested.

Claim 1 has also been amended to place it into better form for allowance. Entry into the official file is respectfully requested.

Claims 1 – 3 and 8 – 11 stand rejected under 35 USC §103 over Hauser. The Applicants note with appreciation the Examiner's detailed comments hypothetically applying Hauser to those rejected claims. The Applicants nonetheless respectfully submit that Hauser is inapplicable to Claims 1 – 3 and 8 – 11 for the reasons set forth below in detail.

The rejection states with respect to Claim 1 that Hauser teaches a stainless steel material having less than 0.04% carbon and 0.1 – 0.3% nitrogen as taught in col. 2, lines 1 – 17. The rejection also states that the Hauser steel is composed of 30 – 70% austenite and ferrite in col. 2, lines 18 – 21. Then, the rejection concludes that Claim 1 would be obvious over Hauser because:

The overlap of the ranges taught by 'US 441 and the claimed ranges is sufficient to establish a *prima facie* case of obviousness (MPEP § 2144.05).

This discussion of Claim 1 directly addresses the Applicants' claimed metal structure containing a ferrite phase and an austenite phase. It also accounts for the volume percentage of the austenite phase being in a range from about 10 to about 85% as claimed. The rejection does not explicitly state that adding, for example, 0.04% carbon and 0.3% nitrogen results in, for example, 0.34 as an amount of (C+N) which is within the claimed range. However, the Applicants interpret the rejection to have that meaning. As such, that amount of added carbon and nitrogen would be within the range of about 0.16 to about 2% by mass as recited in the claims.

The Applicants respectfully submit that this non-stated assumption in the rejection would be incorrect. Claim 1 specifically recites that the amount of (C+N) "in the austenite phase" is within a range of from about 0.16 to about 2%. In other words, the amount of (C+N) is not necessarily constant throughout the entire metal structure. Instead, there is a specific amount of (C+N) in the austenite phase and potentially a different amount of (C+N) in the ferrite phase. The Applicants further respectfully submit that Hauser does not disclose and does not account for the fact that the (C+N) content can vary between the austenite phase and the ferrite phase within the metal structure. While it is true that Hauser accounts for a two-phase structure of austenite and ferrite, Hauser only discusses the relative percentages of the amount of the austenite phase relative to the ferrite phase. There is no disclosure concerning the relative amount of (C+N) in the austenite phase versus the amount of (C+N) in the ferrite phase. In fact, the Applicants respectfully submit that there is no appreciation for the fact that there could be differences.

Thus, the Applicants respectfully submit that a portion of the rejection is based essentially on "inherency." In other words, Hauser discloses the relative volume percentages of the austenite phase

versus the ferrite phase within the Applicants' claimed range and also discloses carbon and nitrogen contents that when added together fall within a particular range that matches a range in Applicants' Claim 1. However, for the rejection to be complete, it must rely on inherency to assume that the amount of (C+N) in the austenite phase (as opposed to the ferrite phase or any other phase or the metal structure as a whole) is within the claimed range of about 0.16 to about 2%. The only way that the rejection can be sustained is to rely on the notion that the amount of (C+N) in the austenite phase is inherently within the claimed range of about 0.16 to about 2% because all of the other claim limitations are met. The Applicants respectfully submit, however, that such an assumption of inherency would be incorrect.

It must be remembered in utilizing inherency upon which to base a rejection that the characteristic that is allegedly inherent must "necessarily" be present. It is not enough that the claimed characteristic "might" be present, "could" be present or even "most likely" would be present. The inherency requirement is stringent and clear: the claimed characteristic must "necessarily" be present.

In this case, the Applicants respectfully submit that Hauser does not meet this standard. There is no evidence in Hauser that the Applicants' claimed amount of (C+N) in the austenite phase is in a range from about 0.16 to about 2%. This can be found by looking at both the Applicants' Specification on the one hand and the Hauser disclosure on the other hand. In that regard, the Applicants invite the Examiner's attention to the Applicants' Specification such as, for example, the text beginning on page 23 at paragraphs [0077] and [0078]. The Applicants teach that it is important to adjust the steel composition and the annealing condition (temperature and time) in the final annealing step. In the context of the annealing temperature, an excessively high annealing temperature decreases the percentage of the austenite and an excessively low annealing temperature

induces precipitation of C and N as carbides and nitrides to decrease the amount of solid solution. Thus, the temperature for final annealing should be between 700°C and 1300°C. Also, the Applicants teach that a longer annealing time is preferable because the percentage of austenite phase comes close to an equilibrium state determined by the steel composition and the temperature. Thus, an annealing time of about 30 seconds or thereabout is preferred. What this means is that the Applicants have discovered, as also taught in paragraph [0051] on page 15, that controlling the amount of (C+N) in the austenite phase is achieved by adjusting the composition and annealing compositions (namely, temperature and time). The Applicants have determined that using specified amounts of (C+N) plus other constitutional elements, when taken with particular final annealing temperatures and times, results in an amount of (C+N) in the austenite phase which is in a range of about 0.16 to about 2%, which is highly favorable.

The Applicants respectfully submit that Hauser provides no teachings that would lead one skilled in the art to have an appreciation for what the Applicants have discovered and Hauser also fails to provide disclosure which would cause one skilled in the art to believe that the claimed characteristic of the amount of (C+N) in the austenite phase is in a range from about 0.16 to about 2% would "necessarily" be present as required when using inherency as a basis for forming a rejection.

The Applicants provide a variety of examples in their disclosure to illustrate various compositions and the manner in which they are made. As a consequence, those skilled in the art can see that the Applicants typically use final annealing temperatures on the order of about 1000 – 1200°C and annealing times between about 30 seconds and one minute to achieve the claimed amount of (C+N). In sharp contrast, the entire disclosure of Hauser, taken with the specific examples in that disclosure, reveal that there is no disclosure of manufacturing methodology that

would inherently result in the Applicants' allegedly inherently present amount of (C+N) in the austenite phase. This is because Hauser uses very different manufacturing methodology. For example, at the top of col. 3, Hauser teaches a steel that is subject to a forging operation at about 1200°C followed by hot conversion to obtain a hot rolled strip wherein the strip is treated at 1050°C and then quenched in water. This is a completely different process from what the Applicants do and surely does not fall within the final annealing steps of the Applicants' temperatures and annealing times. Additional disclosure may be found, for example, in col. 5, beginning at line 47 of Hauser wherein an annealed wrought steel was made by forging at 1200°C and then the steel was annealed at a temperature of 1100°C for 30 minutes. Again, these conditions are sharply different from the conditions that the Applicants' steels are subjected to. As a result, the Applicants respectfully submit that one skilled in the art would have a reasonable expectation that the (C+N) amount in the austenite phase of the Hauser steels could very well be different. In any event, the sharp differences in manufacturing methodology are such that one skilled in the art would not have a reasonable expectation that the claimed physical characteristic of the amount of (C+N) in the austenite phase in Hauser would "necessarily" be the same as the Applicants'. The Applicants therefore respectfully submit that Hauser does not provide disclosure that meets the requirements for inherency upon which this rejection is partially based. The Applicants therefore respectfully submit that Claims 1 – 3 and 8 – 11 are anything but obvious over Hauser. Withdrawal of the rejection is respectfully requested.

Claims 4, 6, 12, 14 and 16 – 20 stand rejected under 35 USC §103 over the hypothetical combination of Espy with Hauser. The Applicants respectfully submit that hypothetically combining Espy with Hauser does not cure the deficiencies set forth above with respect to Hauser. Therefore, combining Espy with Hauser would still result in a steel having an amount of (C+N) in the austenite phase that would be very likely outside of the claimed range. In any event, there would be no

reasonable expectation that the claimed amount of (C+N) would "necessarily" be present as is required under inherency.

Moreover, Claim 14 is not obvious because V is not disclosed in Espy. The minimum limit of 0.005% of V may be found in paragraph [0072] of the Applicants' Specification. Examples corresponding to Claim 14 in Table 7 and Table 8 are shown therein and a number of Examples contain V in a range of 0.005 to about 0.5 mass%.

This is sharply contrasted to Espy which provides stainless steel for manufacturing, through cold heading, fasteners which are considered to be cold forged products manufactured by rolling steel bars. From this, Espy and Claim 14 are considered to be quite dissimilar in the shapes of their final products (which are steel sheets, in the case of Claim 14) and in manufacturing processes. Also, Espy requires 4 to 11% Mn in balance with Cr and to stabilize the austenite phase whereas, according to Claim 14, to improve corrosion resistance at welded parts, the Mn content is set to 4 to 12% (as set forth in paragraphs [0123] and [0124] of the Applicants' Specification (see Fig. 9)). Withdrawal of the rejection is respectfully requested.

Claims 5, 7, 13 and 15 stand rejected under 35 USC §103 over the hypothetical combination of Yazawa with Hauser. The Applicants respectfully submit that hypothetically combining Yazawa with Hauser does not cure the deficiencies set forth above with respect to Hauser. Therefore, combining Yazawa with Hauser would still result in a steel having an amount of (C+N) in the austenite phase that would be very likely outside of the claimed range. In any event, there would be no reasonable expectation that the claimed amount of (C+N) would "necessarily" be present as is required under inherency.

Further, Yazawa relates to a ferrite single-phase stainless steel and is dissimilar in terms of metal structure to the austenitic-ferritic stainless steel defined in Claim 13. The properties of hot

workability between the single-phase steel of Yazawa and the dual-phase steel of Claim 13 cannot be said to be equal and the effects of additive elements also cannot be regarded as the same. It would therefore be quite difficult for one skilled in the art to apply the knowledge of the single-phase steel of Yazawa to the dual-phase steel of Claim 13. Further, while the Mn content is restricted to 1% or less for improving hot workability according to Yazawa, with Claim 13 (as set out in paragraphs [0107] and [0108] in the Applicants' Specification) Mn is restricted to 2% or less to improve the punch stretchability and antiweatherability (see Fig. 5 and Fig. 6 of the Applicants' Specification). As discussed above, the reasons for restricting Mn contents as specified in Yazawa and Claim 13 are different. Therefore, the subject matter of Claim 13 would not result by combining Hauser and Yazawa.

With respect to Claim 15, Yazawa relates to a ferrite single-phase stainless steel and is dissimilar in terms of metal structure to the austenitic-ferritic stainless steel defined in Claim 15. The properties of toughness to impact and ductility between the single-phase steel of Yazawa and the dual-phase steel of Claim 15 cannot be equal and the effects of additive elements also are unable to be regarded as the same. Therefore, one skilled in the art would not apply the knowledge of the single-phase steel of Yazawa to the plural-phase of Claim 15.

Furthermore, to improve toughness to impact and enhance ductility, Yazawa restricts the Si content to 1% or less. In contrast, to improve resistance to corrosion sensitivity in grain boundaries, the Si content is restricted to 0.4% or less in Claim 15 (as set out in paragraph [0141] of the Applicants' Specification (see Table 14A)). Withdrawal of the rejection is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

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